his kindly appreciation. Apart from scientific work Weismann found his chief recreation in music, and with Huxley he could quote Landor's line—

> I warmed both hands before the fire of life.

Throughout a long and energetic life Weismann worked with enthusiasm and success at the subjects nearest to his heart. Many have done the same, but there are few whose chosen labours have done so much to stimulate the work and the thought of others.

E. B. P.

NOTES.

THE collections made by the well-known naturalist and sportsman, Mr. C. V. A. Peel, during the travels and hunting expeditions of twenty-four years, have for long formed a centre of attraction in the city of Oxford. They are housed in a specially-built museum in the Woodstock Road, and include many objects of considerable scientific interest. Among the mammals preserved in the collection are well-mounted examples of the African and Indian elephants, a fine head of the so-called "white" rhinoceros, and a good specimen of the Somaliland eland. Many other species of African antelopes are well represented. The collections are also rich in birds, reptiles, and fishes, the latter including some fine and well-preserved examples of the Salmonidæ. The insects and arachnida, several of which were new to science, collected by Mr. Peel in the "horn" of Africa during the years 1895 and 1897, formed the subject of a paper in the Zoological Society's Proceedings for 1900. His adventurous journeys in that region were fully described by him in his book, "Somaliland," published in 1899. The more important invertebrate captures have been lodged in the Hope Collection at Oxford, and in the British Museum (Natural History), but the remainder, together with the extensive series of vertebrates above referred to, and the building in which they are displayed, have now been generously presented by Mr. Peel to the city of Oxford.

IN reply to a question as to British manufacture of synthetic dyes asked in the House of Commons on Monday, November 23, Mr. Runciman said:—"Since the beginning of the war the earnest attention of his Majesty's Government has been given to the best means of averting the grave danger of stoppage of employment in the textile and other industries which depend upon a supply of colours owing to the interruption of imports from Germany. Emergency measures are already being taken to secure for the time being the continuity of supply of dyestuffs by encouraging the immediate development of existing sources in the United Kingdom and elsewhere. In addition, however, the inquiries of the Government have led them to the conclusion that the excessive dependence of this country on a single foreign country for materials of such vital importance to industries in which millions of our workpeople are employed constitutes a permanent danger which can only be remedied by a combined national effort on a scale which requires and justifies an exceptional measure of State encouragement. Accordingly the Board of Trade has entered into consultations with the principal interests concerned with a view to the elaboration of a scheme for the establishment of an undertaking for the production of synthetic dyes and colours. In the main it is hoped that the capital required will be forthcoming from the industries by which dyes and colours are mainly used, but the Treasury is prepared within certain limits, and subject to certain conditions, to afford financial support to a well-considered scheme which will be permanently under British control. I am not prepared at the moment to enter into fuller details, because several matters are still the subject of confidential negotiations, but further information will be made public as soon as practicable."

THE death is announced, at sixty-six years of age, of Dr. G. F. W. Thibaut, registrar of the University of Calcutta since 1906, and formerly assistant to Prof. Max Müller, in the preparation of the later volumes of the great edition of the "Rig Veda," as well as the smaller text edition, and principal of the Muir Central College, Allahabad.

WE regret to see the announcement of the death on November 20 of Dr. J. Burney Yeo, Emeritus Professor of Medicine, King's College, London, and author of "A Manual of Medical Treatment," "Food in Health and Disease," "The Therapeutics of Mineral Springs and Climates," and numerous articles and papers published in medical and other journals.

THE death is announced from Bulawayo of Mr. R. N. Hall, author of "Prehistoric Rhodesia" and a number of papers on South African races and traditions. Mr. Hall arrived at the conclusion that the old mines and ruined temples of Rhodesia, including the Zimbabwe temple, date from ancient times, and were due to Semitic immigrants—a view opposed to that reached by Dr. R. Maciver in "Mediæval Rhodesia," in which it is held that the buildings at Zimbabwe are the work of a native race of comparatively modern times.

THE most important contribution to the August issue of the *National Geographic Magazine* is an account by Messrs. Ellsworth and Emery Kolb of their experiences in the Grand Cañon of Arizona. The writers have lived for twelve years at the head of the Bright Angel trail, and from this point have made repeated excursions into this stupendous gorge. The first part of the article describes a trip to what is considered the most beautiful of the tributary cañons, that of Cataract Creek; the second an exploration of the cañon of the Little Colorado; the third a repetition of Major Powell's famous journey down the Green and Colorado rivers. The article is illustrated by a splendid collection of photographs procured at imminent risk to life and limb. The monograph fully describes the geography, scenery, and geological features of this remarkable gorge.

IN the issues of the *National Geographic Magazine* for September and October, the immense stock of photographs at the disposal of the National Geographic Society of Washington has been drawn on to supply a more vivid and instructive record of the countries engaged in the present war than has hitherto appeared in any British publication. France, Belgium, Germany, Hungary, and England are each in its turn illustrated by admirable views of scenery, architecture, and country life. Prof. R. G. Usher, professor of history in the University of Washington, dealing with England, "the oldest nation of Europe," gives a survey of its historical progress and industrial resources in relation to the present war. He sums up the situation by remarking: "While no one who is truly candid will deny that England has still much to attain in political and social consciousness and a long road to travel before the national consciousness will become instinctive upon aught but the simplest subjects, he will still be compelled to admit that England has progressed further in spiritual national consciousness than any other community in the world simply because the early attainment of territorial and racial unity enabled the ancestors of the present Englishmen to begin living together long, long before the final elements of other nations had been assembled."

AN interesting phase in the evolution of art is discussed by Mr. F. G. Speck in his monograph on the double-curve motive in north-eastern Algonkian art, published as Memoir 42 by the Department of Mines, Canada. After fully describing, with abundant illustrations, the development of this form of decoration, he arrives at the conclusion that we find in it an originally non-symbolic decorative element, presumably an indefinite plant or floral figure, common to all members of the north-eastern Algonkian group both north and south of the St. Lawrence. Passing from this primary area, the motive has been borrowed by other western tribes, mostly Algonkian, and subjected to local modification. Among the Penobscots and perhaps their eastern neighbours the double curve has acquired, to a certain degree, a symbolic value due to contact with the more politically complex Iroquois. These positions, he admits, may require modification when the study of symbolism among the tribes east of the Penobscots, and the inter-relation between their art as a whole and that of the Iroquois, come to be more carefully investigated.

THE twenty-second report of the Board of Health on leprosy in New South Wales for the year 1912 has been issued. On January 1 of that year only eighteen persons remained under detention at the lazaret. During the year five persons were reported to the Board as being suspected lepers, of whom four were certified as suffering from leprosy. Details are given of the condition of these new patients and of the methods and results of the treatment of the old cases.

THE National Council for Combating Venereal Diseases was inaugurated at the Royal Society of Medicine on November 11. The gathering was a distinguished one, and representative of widely different interests. The aims and objects of the council are the following:—(1) To provide accurate and enlightened information as to the prevalence of these diseases, and as to the necessity for early treatment. (2) To promote the provision of greater facilities for their treatment. (3) To increase the opportunities of medical students and practitioners for the study of these diseases. (4) To encourage and assist the dissemination of a sound knowledge of the physiological laws of life in order to raise the standard both of health and conduct. (5) To co-operate with existing associations, to seek their approval and support, and to give advice when desired. (6) To arrange, in connection with such organisations, for courses of lectures, and to supervise the preparation of suitable literature. (7) To promote such legislative, social, and administrative reforms as are relevant to the foregoing aims and objects.

IN the course of a paper on the birds of Costa Rica, published in the September number of *Zoologica,* Mr. L. S. Crandall remarks that the alleged scarcity and shyness of the brilliantly coloured king-vulture are not borne out by his experience, several of these birds allowing themselves to be approached within a distance of forty yards while feasting on a carcase. In a second article Mr. C. W. Beebe discusses the Himalayan and Far Eastern kalij-pheasants of the genus Gennœus, and concludes that the number of species has been much exaggerated.

AT the conclusion of an article on the responses or reactions of animals and plants to stimuli—as exemplified by changes in function, structure, and colour induced, either directly or indirectly, by external conditions—published in the *American Naturalist* for November, Prof. V. E. Shelford remarks that, in his opinion, the doctrines of purposeful advantageous response, of natural selection, and of the continuity of the germ-plasm cannot be accepted in their entirety. "Each appears to have arisen from a recognition of certain more or less unconsciously selected and uncritically determined phenomena by each of several men who secured different facts and attempted explanations."

IN the November number of *Wild Life,* Mr. Russell Roberts, who, we believe, is now serving with the army, resumes the account of his personal experiences of African big game, dealing in this instance with the black rhinoceros, of which several striking photographs are given. The author totally discredits the alleged excessive ferocity of this species, remarking that reports to this effect are for the most part due to want of sufficient acquaintance with the animal. A wonderful photograph of a sedge-bird, by Mr. Lodge, and a second of waterfowl on the lake in Woburn Park are other features of this issue. An article on the Zoological Gardens is marred by the statement that certain Australasian marsupials range as far *east* as New Guinea.

SAN FRANCISCO has started a new journal, to be published quarterly by the California Fish and Game Commission, under the title of *California Fish and Game,* the first number of which appeared in October. California, it seems, has not yet fallen into line with the neighbouring States in the matter of the prohibition of the sale of wild ducks and other wild table-birds; and it has been made a ground of complaint that wild ducks reared in Oregon and Washington migrate into California, where they are ruthlessly shot and sold. A Bill was introduced into the local legislature last year with the object of remedying this state of affairs, but was defeated as the result of a *plébiscite*. The greater portion of the contents of the first number of the new issue is devoted to arguments in favour of amending the present anomalous condition of affairs.

WE have much pleasure in congratulating the Royal Zoological and Acclimatisation Society of Victoria on the attainment of its "jubilee." In the fiftieth report of the council, for 1913, it is stated that the first buildings in the then newly-formed gardens at Melbourne were erected in June, 1862. The early efforts of the society were entirely restricted to acclimatisation, and it was not until 1870 that "Zoological" was added to its title, and that foreign animals were imported solely for the purpose of public exhibition. Judging from the photographs in the jubilee report, the collection of such imported animals must now be a fine one, but to an English eye the greatest attraction of the Melbourne Gardens must be the native Australasian species, among which we may specially refer to a group of tree-kangaroos or tree-wallabies, photographed amid the branches of a tree, in the report.

ACCORDING to the report of the general meeting held on November 17, the Zoological Society is suffering severely from the collateral effects of the war, the number of visitors to the gardens during August, September, and October being 307,826, or 124,154 fewer than during the corresponding period of 1913. The total number of visitors during the year has so far been 1,011,526, and the take of gate-money 23,786*l.*, or a decrease in the number of visitors of 75,059 and in the receipts of 2879*l.*, as compared with the first ten months of last year. Nevertheless, the fact that on October 25 the number of visitors who had passed the turnstiles during the year reached a million is a record which has been equalled only twice during the last eighty-six years. Eighteen new fellows were elected, and twenty-one candidates for the fellowship or honorary membership and eight for the corresponding-membership were proposed. The number of fellows hitherto elected during the year is 263, or three fewer than in the corresponding portion of 1913, this being, however, an increase of forty-seven above the average at the corresponding date for the last ten years. During August, September, and October 620 additions had been made to the menagerie—444 by presentation, 51 by purchase, 58 on deposit, 29 by exchange, and 38 born in the gardens.

IN the *Ophthalmic Review* for September, Dr. Edridge-Green publishes a short account of his theory of vision, and adduces the facts and arguments which have led him to its adoption. According to this theory the cones are the only terminal perceptive visual organs, the function of the rods being confined to the formation and distribution of visual purple. Vision he supposes to take place by stimulation of the cones through the photo-chemical decomposition of the liquid in which they are bathed, this liquid being sensitised by the visual purple. As against the argument that the visual purple is absent from the macula lutea, the region of most distinct vision, he adduces two observations by Devereux Marshall and himself on the eyes of monkeys which had been kept in the dark for forty-eight hours before being killed. He states that in these circumstances the yellow spot was the reddest part of the whole retina owing to the diffusion of visual purple from the surrounding parts of the retina between the cones. It is a pity that these observations have not yet been confirmed. Assuming their correctness, Dr. Edridge-Green brings forward many other considerations which tell in favour of his view. An important point in his argument is the absence of qualitative difference between central and peripheral vision, and he is supported by Tschermak, Hering, Hess, and Garten in his assertion that the difference between the vision of foveal and parafoveal areas is merely quantitative. The difference between the sensibility of the light and dark adapted eye he shows to be analogous to the difference in the spectral distribution of chemical effect with varying intensities of illumination. Several subjective visual phenomena are shown by him to agree with the theory.

A USEFUL paper by Mr. B. C. Wallis entitled, "The Distribution of Rainfall in the North-eastern United States: its Causes and Results," is published in the *Scottish Geographical Magazine* for November, based upon observations contained in the annual report of the United States Weather Bureau. The area embraces districts in which corn, cotton, and tobacco are cultivated, and various maps and diagrams show by means of "equipluves," or lines of equal average rainfall coefficients or percentages, the areas and dates of the wettest and driest months, and consequently the districts where such industries can best be carried on. The diagrams show, among other things, (1) that the maximum rainfall occurs between 130 and 140 per cent. of the normal, and that the minimum occurs between 70 and 80 per cent. of the normal, and (2) that in the north the rise in the rate of precipitation is faster than the fall, while in the Ohio valley and to the south-east the opposite is the case. The method is admittedly not new; it is fully explained in the Quart. Journ. Roy. Met. Soc. for October last (p. 311), and in an instructive note (p. 322) Mr. C. Salter states that a very similar method (the results of which were embodied in a paper to the society on November 18) has been for some years adopted by the British Rainfall Organisation. The usual *monthly* rainfall averages are expressed as percentages of the *annual* value at each station; in this way some "exceedingly interesting facts" are disclosed, with many fewer stations than are necessary when dealing with maps of actual monthly averages.

AN abstract of the results obtained by Mr. H. L. Curtis, of the Bureau of Standards, during his tests of the resistivities of nearly seventy insulating materials, appears in the Journal of the Washington Academy of Sciences for October 19. In all cases contact with the material was made by means of mercury electrodes, and the effects of surface leakage were eliminated by the use of a guard ring. The temperature of the specimen and the humidity of the surrounding air do not affect the order of magnitude of the results, but for the best insulators the time of application of the voltage has a serious influence on the values obtained. Some of the most useful results are:—Fused quartz, special paraffin, and ceresin, all over 10^{18}; micas from 10^{17} to 10^{13}; sulphur, 10^{17}; bakelite, 10^{16} to 10^{11}; glass, 10^{14} to 10^{12}; unglazed porcelain, 10^{14}; paraffined wood, 10^{13} to 10^{11}; marble, 10^{11} to 10^{9}; and slate, 10^{8} ohms per centimetre cube. One of the most noticeable features of the table given by the author is the great difference between the insulating properties of different specimens of materials going by the same name.

A VERY interesting example of an experimental steam engine and accessories has just been supplied to the Marine School, South Shields, by Messrs. W. Sisson and Co., Ltd., of Gloucester. An illustrated description of this engine appears in *Engineering* for November 20. The engine is of the quadruple expansion type, and has four cylinders operating on four cranks, set at such angles as to give the best balancing results. The arrangements permit of the engine being run as a triple-expansion or compound engine, as may be found expedient for experimental purposes. The high-pressure cylinder is jacketed, and is provided with Meyer's expansion gear, operating on piston valves. The first intermediate cylinder is also steam-jacketed, and has a piston valve of the maker's special labyrinth type. The second intermediate and low-pressure cylinders have single-ported, flat-faced slide valves. Each cylinder has Stephenson's link-motion reversing gear. The engine drives either a dynamo or a Heenan and Froude dynamometer. The air-pump is of the ordinary single-acting type, and the surface condenser is independent of the engine.

A GREAT deal of experience has now been acquired regarding the cost of operating and maintaining systems of substations required in electric railway installations, and Dr. H. F. Parshall read a paper at the Institution of Civil Engineers on November 17 having for its object the assisting towards the standardisation of electric railway substation practice. The number of independent variables when a complete system with substations has to be dealt with is so great that the mathematical expression, from which might be deduced the minimum cost, would in practice be open to some suspicion. Hence the author gives in the paper a complete balance-sheet embodying every item for each case; without any great amount of labour, the methods and results given may be applied to practically any class of electric railway installation. Curves are also given showing the arrangements of substations that will operate different train services on different electrical systems, and at various voltages with a minimum total operating cost. Curves are included illustrating the advantages gained by working at high voltages, and these confirm Dr. Parshall's view that with the present arrangement of rotary-converter substations, there is little advantage in a higher voltage than 2400 for the track conductor.

ERRATUM.—On p. 318, col. 2, line 9 from bottom, for "miles" read "metres."

OUR ASTRONOMICAL COLUMN.

COMET NEWS.—Comet Delavan (1913*f*) is a morning object but situated low down. The following two-day ephemeris has been communicated by the Observatory of Copenhagen, and is a continuation of that which appeared in the *Astr. Nachr.*, No. 4756:—

Ephemeris 12h. Mean Time Berlin.

	R.A. (true)			Dec. (true)		Mag.
	h.	m.	s.	°	′	
Nov. 25	15	37	56	+6	9·3	
27		42	16	5	2·0	5·2
29		46	31	3	56·5	
Dec. 1		50	39	2	52·6	5·2
3	15	54	41	+1	50·2	

Last week the elements and ephemeris of Lunt's comet (1914*d*) were given in this column. It seems that this comet was discovered independently by several observers, and the Lick Observatory Bulletin No. 262 gives the elements and ephemeris of Comet 1914*e* (Campbell), which refers evidently to the same object. In this bulletin it is stated that the first telegraphic announcement from the Harvard College Observatory described it as a bright comet seen in the southern constellation Doradus by Leon Campbell at Arequipa. As the ephemeris given in this column last week differs slightly from that printed in this bulletin, a portion of it is reproduced below:—

Greenwich Mean Midnight.

	R.A. (true)			Dec. (true)		
	h.	m.	s.	°	m.	s.
Nov. 25·5	21	54	45·0	+9	58	43
27·5		56	1·3	10	19	52
29·5		57	20·8	10	40	28
Dec. 1·5		58	42·9	11	0	35
3·5	22	0	7·7	+11	20	17

In *Knowledge* for November, Dr. Crommelin gives an interesting account of former appearances of Encke's comet, together with a chart illustrating the approach of this object to Mercury about twelve days after its perihelion passage, which occurs on December 5 next. The comet, he states, is likely to be a conspicuous object in November. The following is a portion of the ephemeris which he publishes:—

Ephemeris for Berlin Noon.

	R.A.			Dec.	
	h.	m.	s.	°	
Nov. 26	14	41	46	−10	16
30	14	57	33	14	20
Dec. 4	15	17	20	18	3
8	15	41	12	21	18
12	16	7	27	23	54
Dec. 16	16	34	6	−25	50

Mr. Denning, in the *Observatory* for November, communicates a short article on Encke's comet, and gives a table of all the comet's returns, with the dates of its redetection and periods.

SPARK SPECTRUM OF NICKEL UNDER PRESSURE.—Attention has often been directed in this column to many investigations regarding the fact that the wave-lengths of spectrum lines, determined from measurements in the solar absorption spectrum, display small differences when they are compared with the measurements of the same lines in spectra secured from terrestrial light sources. Numerous observers have attributed these discrepancies to the effect of pressure, but more recently Mr. Evershed has ascribed the solar displacements to Doppler effects. It is of importance, therefore, to pursue the study of the effect of pressure on the behaviour of lines in spectra, and in this connection the investigation of the spark spectrum of nickel which has been completed by Mr. E. G. Bilham